

REMARKS

Claims 31-60 are cancelled and new Claims 61-89 are added. Claims 61-89 remain in the application. No new matter is added by amendments to the description and the claims.

The Rejections:

In the Final Office Action, dated January 27, 2006, the Examiner rejected Claims 31-33, 37-39, 40, 42, 44, 46, 48, 49, 51, 55, and 56 under 35 U.S.C. 103(a) as being unpatentable over Takeo (US Patent 4,721,630) in view of Yamamoto (US Patent 5,240,745) and Pearce (US Patent 4,781,517).

The Examiner rejected Claims 34, 52 and 60 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto, Pearce, and further in view of Thome (US Patent 5,744,190).

The Examiner rejected Claims 35 and 53 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto, Pearce and Thome, and further in view of Cebola (US Patent 5,738,727).

The Examiner rejected Claims 36 and 54 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto, Pearce and Thome, and further in view of Neikter (US Patent 5,296,026).

The Examiner rejected Claims 43 and 50 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto and Pearce, and further in view of Josefsson (US Patent 5,766,355).

The Examiner rejected Claims 45, 47, 58 and 59 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto and Pearce, and further in view of Cebola (US Patent 5,738,727).

The Examiner rejected Claims 41 and 57 under 35 U.S.C. 103(a) as being unpatentable over Takeo, Yamamoto, Pearce, and further in view of Hohn et al (US Patent 4,896,274).

The Cited References:

Takeo shows an apparatus for painting the inner panel portions of vehicle body front and rear lids and doors using front and rear painting robots. The Takeo apparatus moves a vehicle body W to a painting stage A positioned between first and second railway means 11 mounted on

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a floor at the painting stage A. The rails 11 are positioned well below the bottom of the vehicle body W, as seen in Fig. 2, as are tables 12₁, 12₂ movable along the rails and carrying robots 5₁, 5₂ respectively.

Yamamoto shows, in Figs. 15 and 16 referenced by the Examiner, a painting apparatus 500 that has floor mounted rails 518a, 518b positioned on opposite sides of a path of travel of a vehicle body 522. Contrary to the Examiner's statement, the rails 518a, 518b are not elevated. These same rails are identified as 34a, 34b in Fig. 16 since they are the same as the previous embodiment. The vertical posts 38 move along the rails 518a, 518b and support opposite ends of a painting mechanism 520 that has a plurality of paint spray guns 574a through 574i mounted on a horizontal arm 572. Contrary to the Examiner's statement, Yamamoto does not show any painting robots. Also contrary to the Examiner's statement, the posts 38 and the arm 572 do not form a rigid structure with the rails 518a, 518b since they are movable along the rails.

Pearce shows, in Fig. 2 referenced by the Examiner, four vertical posts 13, 18, 19 and 20 supporting a frame 21 formed by two lateral members 22 attached to two transverse members 23. A bridge member 24 has opposite ends 43 movable supported on the transverse members 22. A robot carriage 71 is mounted for movement along the bridge member 43 transverse to the path of travel of a vehicle body 50.

Thome shows floor mounted painting robots connected to controllers.

Cebola shows a roof machine having paint sprayers connected to conduits and cables for coating product, air and electric current wherein the conduits and cables are housed in a beam carrying the sprayers.

Neikter shows painting "automatics" 5, 6 enclosed in flexible, gas-permeable material enclosures 12, 22. The enclosures 12, 22 are pressurized such that part of the air flows out to repel paint particles.

Josefsson shows a paint spray booth for the application of powder paint from fixed applicators 104a, 104b, 214, 314.

Hohn shows a robot with an adhesive material dispensing gun 120 mounted on a wrist 27 having three axes of motion.

Applicants' Response:

Applicants amended the paragraph starting at Line 7 on Page 9 to provide support for the position of the robot shoulder axis recited in the new claims. The position of the shoulder axis 34 below the frame rail 11 is shown in Fig. 6 as originally filed.

All of the rejections in the Final Office Action include Takeo in view of Yamamoto and Pearce. This combination of references does not show or suggest the following elements recited in Applicants' new independent Claims 61, 72 and 81:

1) A pair of frame rails located above a plane of an upper surface of the vehicle body as the vehicle body travels the path (Claims 61, 72 and 81). Takeo and Yamamoto show frame rails mounted below the lower surface of the vehicle body. Pearce shows elevated frame rails. However, if the Pearce elevated frame rails were substituted for the Takeo frame rails, the Takeo painting robots could not reach the inner panel portions of the doors to perform their intended tasks.

2) The frame rails are connected together in a rigid frame structure that prevents movement of one of said frame rails relative to another of said frame rails, prevents movement of said frame rails relative to said plane, and minimizes a width of said rigid frame structure relative to a width of the vehicle body (Claims 61 and 72). The frame rails in Takeo are not connected together and there is no way to connect them because the conveyor is between them.

3) At least two legs attached to each said frame rail for supporting said frame rails above a plane of the upper surface of the vehicle body on the path (Claim 72). As stated above, Takeo shows frame rails mounted below the lower surface of the vehicle body. If the Pearce elevated frame rails were substituted for the Takeo frame rails, the Takeo painting robots could not reach the inner panel portions of the doors to perform their intended tasks.

4) At least one cross member fixedly connecting said frame rails together as a rigid frame structure that prevents movement of said frame rails, fixes said frame rails relative to one another and to said plane, and minimizes a width of said rigid frame structure relative to a width of the vehicle body (Claim 72). As stated above, the frame rails in Takeo are not connected together and there is no way to connect them because the conveyor is between them.

5) A first and a second robot arm (at least one robot arm) mounted on an associated one of each of said frame rails, being movable along said associated frame rail and having a shoulder

axis being positioned below said associated frame rail (Claims 61, 72 and 81). Takeo, Yamamoto and Pearce do not show a robot arm with a shoulder axis positioned below the frame rail.

6) a paint applicator mounted on each of the robot arms whereby the robot arms move the paint applicators to dispense paint to cover the upper surface and adjacent side surfaces of the vehicle body with the paint (Claims 61, 72 and 81). The robot arms in Takeo are configured to only paint the interior surfaces of the doors. Yamamoto shows a bridge-like painting mechanism; not a robot arm. Pearce shows a robot carriage, not a robot arm, and does not involve painting.

7) Control means connected to each of said first and second robot arms for selectively dispensing the paint in a normal mode wherein different areas of the upper surface and the adjacent side surface are covered by said paint applicators of each of said first and second robot arms and a degraded mode wherein the upper surface and the adjacent side surface are covered by said paint applicator of one of said first and second robot arms (Claim 81). None of the references suggests controlling robots to paint in a normal mode and a degraded mode as recited in Claim 81.

Thome shows floor mounted painting robots, similar to Takeo, connected to controllers, but does not provide any of the missing elements.

Cebola shows a roof machine, similar to Yamamoto, having paint sprayers connected to conduits and cables for coating product, air and electric current, but does not provide any of the missing elements.

Neikter shows wall mounted painting robots and a roof machine, but does not provide any of the missing elements.

Josefsson shows a roof machine and wall mounted spray applicators, but does not provide any of the missing elements.

Hohn shows a robot with an adhesive material dispensing gun mounted on a wrist having three axes of motion, but does not provide any of the missing elements.

Filed herewith is an Information Disclosure Statement identifying a prior art publication showing a P-200T overhead rail-mounted robot that can be used for painting. The rail is supported by a pair of legs as a free standing unit. The robot is mounted for travel along a

bottom surface of the rail and has a working envelope that extends almost 360° as shown on the second page of the publication. The P-200T robot has a shoulder axis positioned below the rail.

With respect to Claim 61, the prior art publication does not show or suggest a pair of frame rails connected together in a rigid frame structure.

With respect to Claim 72, the prior art publication does not show or suggest a pair of frame rails connected together by at least one cross member in a rigid frame structure.

With respect to Claim 81, the prior art publication does not show or suggest a pair of frame rails fixedly located in a paint booth, with first and second robot arms mounted on each rail and control means for dispensing paint in a normal mode and a degraded mode.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.